

DETAILED ACTION

This Office Action corresponds to application 10/594,852. Claims 15, 17, 20-22, 24, 26 and 27 are allowed over the prior art of record.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on August 23, 2011 was considered by the examiner.

Response to Amendment

1. The objection to Figure 6 is withdrawn in light of the amendment to the drawing.
2. Applicant has amended claims 15, 21 and 24 to further distinguish the invention over the prior art of record. In light of the amendments, the previous rejections to the claims have been withdrawn.

Allowable Subject Matter

3. Claims 15, 17, 20-22, 24, 26 and 27 are allowed.

Reasons for Allowance

4. The following is an examiner's statement of reasons for allowance: the essential difference from the prior art of record is that the independent claims require the limitations stated below. The respective depending claims are allowed for the same reason as their allowed base claim.

5. Claims 15, 21 and 24 are considered allowable, specifically, because claims 15, 21 and 24 require identifying transaction items of the database and determining an occurrence frequency for each item, wherein determining the occurrence frequency

Art Unit: 2157

includes: scanning a first portion of the database; identifying transaction items of the first portion of the database with an occurrence frequency at least equal to a threshold value; scanning a second portion of the database; and identifying transaction items of the second portion of the database with an occurrence frequency at least equal to the threshold value; locking the identified transaction items to prevent other data mining processes from selecting the identified transaction items; building a probe structure based on the identified frequent transaction items with an occurrence frequency at least equal to twice the threshold value; building a plurality of disjoint branches for the probe structure, wherein each branch of the probe structure includes a number of identified transaction items selected based on content of the transaction items and the occurrence frequency of the transaction items, at least two branches includes a common transaction item, and each of the plurality of disjoint branches are capable of being executed independently from the other plurality of disjoint branches; building a frequent pattern tree (FP-tree) from the branches of the probe structure; grouping the branches of the FP-tree into a plurality of groups, the grouping based on the content of the transaction items of each branch, wherein the number of transactions in each of the plurality of groups is substantially equal; and assigning, via a master processor, each group of branches of the FP-tree to one of a plurality of slave processors, the plurality of slave processors to execute the transaction items identified by the respective branch in parallel with each other, wherein the number of transaction items to be executed by each of the plurality of slave processors is substantially equal.

Art Unit: 2157

6. The closest prior art of record is Han et al. ("Mining Frequent Patterns without Candidate Generation: A Frequent-Pattern Tree Approach," *Data Mining and Knowledge Discovery*, Pages 53-87, hereinafter referred to as Han), Agrawal et al. (U.S. Patent No. 6,230,151 B1, hereinafter referred to as "Agrawal") and Zaki et al., "Parallel Classification for Data Mining on Shared-Memory Multiprocessors," pages 1-8, hereinafter referred to as "Zaki"). However, none of these references alone or in combination render the claims anticipated or obvious.

7. Han discloses mining frequent patterns in transaction databases using a frequent-pattern tree (FP-tree). Efficiency of mining is achieved through (1) a large database is compressed into a condensed, smaller data structure, FP-tree which avoids costly, database scans, (2) FP-tree based mining approach adopts a pattern-fragment growth method to avoid the costly generation of a large number of candidate sets and (3) a partitioning-based, divide and conquer method is used to decompose the mining task into a set of smaller tasks for mining confined patterns in conditional databases. E.g. abstract. However, Han fails to disclose building a probe structure based on the identified frequent transaction items with an occurrence frequency at least equal to twice the threshold value... grouping the branches of the FP-tree into a plurality of groups, the grouping based on the content of the transaction items of each branch, wherein the number of transactions in each of the plurality of groups is substantially equal... assigning, via a master processor, the plurality of slave processors to execute the transaction items identified by the respective branch in parallel with each other in combination of claimed elements.

Art Unit: 2157

8. Agrawal discloses a parallel classification for data mining in a shared-memory multiprocessor system. Lists of attributes are assigned to a processor. The processors independently determine the best splits for their respective assigned lists, and cooperatively determine a global best split for all attribute lists. However, Agrawal fails to disclose building a probe structure based on the identified frequent transaction items with an occurrence frequency at least equal to twice the threshold value... grouping the branches of the FP-tree into a plurality of groups, the grouping based on the content of the transaction items of each branch, wherein the number of transactions in each of the plurality of groups is substantially equal... assigning, via a master processor, the plurality of slave processors to execute the transaction items identified by the respective branch in parallel with each other in combination of claimed elements.

9. Zaki discloses parallel algorithms for building decision-tree classifiers on shared-memory multiprocessor systems. The data parallelism is based on attribute scheduling among processors. However, Zaki fails to disclose building a probe structure based on the identified frequent transaction items with an occurrence frequency at least equal to twice the threshold value... grouping the branches of the FP-tree into a plurality of groups, the grouping based on the content of the transaction items of each branch, wherein the number of transactions in each of the plurality of groups is substantially equal... assigning, via a master processor, the plurality of slave processors to execute the transaction items identified by the respective branch in parallel with each other in combination of claimed elements.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

10. The prior art made of record, listed on form PTO-892, and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RICHARD BOWEN whose telephone number is (571)270-5982. The examiner can normally be reached on Monday through Friday 7:30AM - 4:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Kim can be reached on (571)272-7421. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2157

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. B./
Examiner, Art Unit 2157
October 19, 2011

/ROBERT TIMBLIN/
Primary Examiner, Art Unit 2167